

NASA TECH BRIEF

NASA Pasadena Office



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PPUAS – Photopeak Unfolding and Self-Shielding Program

The problem:

A method was needed for determining radioactive emission rates of nuclear fuels.

The solution:

A computer code labeled PPUAS (Photopeak Unfolding And Self-Shielding) was developed for determination of the photon emission rate.

How it's done:

The emission rate of a PuO_2 nuclear fuel was obtained by using an experimentally measured pulse height distribution of a Ge (Li) Detector. The input data to the program consist of the geometry and characteristics of the specially selected radiation source and the detector. The output data consist of the photon flux at a specified distance from the source, the original unscattered photonic line spectrum of the source, and the self-shielding characteristic of the fuel.

The code is basically written for two different source geometries; however, the unfolding routine can be executed for other source geometries, provided the self-shielding parameter of the fuel is utilized as input data.

Notes:

1. This program was written in FORTRAN V for use on a UNIVAC-1108 computer and will be disseminated as a card deck or as an IBM-generated tape.
2. Inquiries concerning this program should be directed to:

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112 Barrow Hall
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